

PAIL ASSEMBLY FOR TWO MATERIALS

Background of the Invention

Many products that are sold to consumers are sold in two parts, (Part A and Part B) that are to be mixed by the consumer prior to use. Current packaging technology for two part reactive products that is utilized in industry requires placement of a smaller Part B container of a hazardous product inside a larger, sturdy Part A pail to comply with US Department of Transportation (DOT) and Canadian Transportation of Dangerous Goods (TDG) regulatory requirements for shipping "Limited Quantity" of hazardous materials. It is important that the two materials be kept separated and the means of separation is able to withstand the type of stresses common during transportation.

In some cases the Part B package may be a plastic container that is placed inside of a bag and deposited on the Part A material inside of the Part A pail. This approach has the disadvantage that the Part B package is not accessible unless the Part A pail is opened and many times the consumer will have to reach into the Part A material to retrieve the Part B material. Consumers have complained that this procedure is "messy."

Another approach is described in U.S. Patent No. 6,648,164 and comprises a cradle and pail system. The cradle is shaped and sized to be contained within the upper portion of the interior of the pail. The cradle has an interior molded surface forming a recess for storing one or more separately packaged containers such as a catalyst. The cradle is held in place during transport by the crimped lid lugs of the lid. This approach requires the use of a separate gasket to seal the cradle from the contents of the pail. It suffers from the disadvantages that the Part B container is not accessible unless the Part A pail is opened. Further, the filling and assembly of the cradle and pail system require the positioning of a gasket, the positioning of the cradle and the sealing of a lid over the cradle and gasket.

One of the optional aspects of the present invention is that it addresses one or more of the problems discussed with conventional approaches for the packaging of two part reactive products.

Another optional aspect of the invention is that the Part B container is carried on the exterior of the lid of the pail assembly.

Still another optional aspect of the invention is that the Part B container is accessible without the need to expose the Part A contents of the pail to the environment.

Summary of the Invention

Accordingly the present invention provides a pail assembly for packaging a Part A material and a Part B material including a pail with an opening for containing the Part A material, a container for containing the Part B material, a lid assembly having a receptacle to contain and support the

container separate from the Part A material; the lid assembly serving as a closure for the pail containing the Part A material and a lid for closing the container within the receptacle in the lid assembly.

The present invention also provides an integrally formed lid assembly for a pail having a first substantially planar portion defining an axis along its center; an outer flange portion molded thereon and extending from the substantially planar portion at an angle in a first direction. The outer flange portion is provided with a means of attachment to the pail. The lid assembly also includes a receptacle molded into the first substantially planar portion and extending in an axial direction and defining an opening to the receptacle. The lid assembly also includes a protruding portion extending from the first substantially planar portion in a direction substantially opposite the direction of the receptacle and completely surrounding the opening of the receptacle. An external lid is provided to attach to the protruding portion.

Brief Description of the Drawings

Figure 1. is an exploded view of the pail assembly for two constituents according to a first exemplary embodiment.

Figure 2 is a cross section view of the lid assembly.

Figure 3 is a cross section view of the assembled pail assembly

Reference will now be made in detail to exemplary embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the description to refer to the same or like parts.

The pail assembly 1 according to the embodiment illustrated in FIGS.1 may comprise a Part A Pail 10, a lid assembly 20 more specifically described below, a Part B container 30, a Part B container lid 40 and a second external lid 50. The pail assembly 1 may be made of materials acceptable for the transportation of hazardous materials pursuant to the regulations promulgated by the Department of Transportation. These materials may include plastic materials, steel, aluminum and other metals as well as other materials set out in the Non-bulk Performance Oriented Packaging Standards promulgated by the Department of Transportation.

Part A pail 10 may be constructed in various shapes and may be preferably cylindrical. Part A pail 10 may include a circular bottom 11, sidewalls 12, skirt 13 defining a circular horizontal surface 14 and an annular projection 15 having a bead 16 along its periphery and defining an opening 17. Part A pail 10 may be made of any suitable material and may preferably be made of injection molded plastic material such as polyethylene.

Lid assembly 20 is shown in greater detail in FIGS 2 and 3. Lid assembly 20 may comprise an outer flange 21 which should be of an appropriate shape to engage the Part A pail 10. For example, if the Part A pail 10 is cylindrical then the outer flange 21 would be ring shaped. Outer flange 21 may be preferably tapered outwardly to enable multiple lid assemblies 20 to be stacked

on top of each other. The outer flange 21 also includes a circular concave groove 22 designed to engage bead 16 to provide a seal between the lid assembly 20 and Part A pail 10. Alternately, the Lid assembly 20 may be provided with a plurality of detents to engage the bead 16 at the upper part of the side walls 12 of the Part A pail 10. The lid assembly 20 also may include a first inner flange 23, a second inner flange 24, and an annular projection 25 with a bead 26 along the outer circumference of annular projection 25. The lid assembly 20 also may include a horizontal portion 27 inside of the circumference of the annular projection 25. The lid assembly also may include a cylindrical receptacle 28 projecting from the horizontal portion 27. The cylindrical receptacle may be integrally formed with the lid assembly 20. The cylindrical receptacle 28 is sized to receive the Part B container 30. A tear tab 29 may be molded into the flange 21 to allow consumers to easily remove the lid assembly 20 from the Part A pail 10. Preferably the cylindrical receptacle 28 would be tapered to allow for the stacking of multiple lid assemblies 20.

The Part B container 30 may be a smaller pail, a bottle, a bag or other suitable container that can be sealed. In cases where the Part B container 30 is an injection molded plastic pail an adequate closure or lid such as Part B container lid 40 may be part of the pail assembly 1. It is desirable that when the Part B container 30 is closed with Part B container lid 40 and is inserted in the cylindrical receptacle 27, the top of Part B container lid 40 is disposed below the plane defined by the top of annular projection 25. Similarly the diameter of the Part B container lid 40 should be smaller than the diameter of the annular projection 25 thereby allowing a user to easily lift the Part B container 30 from the lid assembly 20. Preferably the Part B container 30 would be placed upright in the receptacle 28 to minimize leakage of any part B material when the pail assembly 1 is in an upright position.

The pail assembly 1 also may include a second external lid 50 designed to engage the annular projection 25 and close the opening formed by the annular projection 25 thereby containing the Part B container 30 securely in the cylindrical receptacle 28. The cylindrical receptacle 30 can be accessed by removing the second external lid 50 while still maintaining the closure on the Part A materials provided by the lid assembly 20.

According to the invention, the Part A product will be filled into the Part A pail 10. Part A pail 10 will then be sealed with the lid assembly 20. After placement of the lid assembly 20 on the Part A pail 10, the smaller Part B container 30 will be filled with the Part B material and sealed with Part B container lid 40. The Part B container 30 will then be placed inside the receptacle 28 of the lid assembly 20. The second external lid 50 will then be secured on the annular projection 25 to enclose the Part B Container 30 in the receptacle 28 of the lid assembly 20. Part A pail 10, Part B container 20, Part B lid 40 and the second external lid 50 may be of standard sizes that are commercially available.

According to the invention, to access the materials in the pail assembly 1, the consumer will remove the second external lid 50 from the modified lid assembly 20 and remove the Part B container 30 from the receptacle 28. The consumer will then remove the lid assembly 20 from the Part A pail 10 by pulling on the tear tab 29 on outer flange 21. The consumer may then pour the contents of the Part B container 20 into the Part A pail 10 and mix both parts together in Part A pail 10 to achieve the desired product reaction for use.

It will be apparent to those skilled in the art that various modifications and variations can be made to the structure. While the geometric description of the components of the pail assembly 1 are described as cylindrical it is readily apparent that different shapes may be used. Thus, it should be understood that the invention is not limited to the examples discussed in the specification. Rather, the present invention is intended to cover modifications and variations.